

Notice of Allowability

Application No.

10/683,583

Applicant(s)

BOCK ET AL.

Examiner

Jeff Lundgren

Art Unit

1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/20/07.
2. ☒ The allowed claim(s) is/are 1,2,9 and 85-89.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |


J. DOUGLAS SCHULTZ, PH.D.
SUPERVISORY PATENT EXAMINER

EXAMINER'S AMENDMENT

An Examiner's Amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR § 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this Examiner's Amendment was given in a telephone interview with Andy Filler on July 25, 2007.

Communication of Restriction Requirement to Applicant

Applicants were informed that during the telephone communication that due to the nature of the amendments that the claims have become divergent, and that Restriction to one of the following inventions is required under 35 U.S.C. § 121:

- I. Claims 1, 2, 9 and 82-89, are drawn to an nano-FET sensor based on a hairpin oligonucleotide, classified in class 435, subclass 6.
- II. Claims 16 and 90-92, are drawn to a glucose oxidase nanowire sensor, classified in class 435, subclass 5.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are directed to related products. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed have a different design and mode of operation, and are mutually exclusive. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

For example, the sensor of Group I relies on an immobilized hairpin oligonucleotide, and provides a signal in the presence of an analyte when it binds to the target analyte by physical repositioning of charge via nucleotide displacement/rearrangement. The sensor of Group II does not require a charge distribution via physical repositioning of charge through displacement, instead, it detects pH changes.

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Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, the inventions require a different field of search (see MPEP § 808.02), the inventions have acquired a separate status in the art due to their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Filler on July 24, 2007, a provisional election was made without traverse to prosecute the invention of Group I. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16 and 90-92 are withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Amendments to the Claims

The following amendments to the claims were authorized by Mr. Filler on July 24, 2007:

Claim 1. A method of detecting a component of interest, the method comprising:

(a) providing one or more nanowires, which nanowires comprise one or more functional groups comprising a hairpin oligonucleotide, which functional group undergoes a change in charge in the presence of the component of interest, wherein the hairpin comprises a first end, a second end, and a central portion, wherein the first end and the second end are complementary to each other and the central portion is complementary to the component of interest, and wherein the first end comprises a charge moiety that is proximal to the nanowires;

(b) contacting the one or more nanowires with a solution comprising the component of interest; wherein binding the component of interest to the central portion of the hairpin oligonucleotide unfolds the hairpin, thereby moving the charge moiety away from the nanowires, producing the change in charge ~~which component produces the change in charge in the functional group,~~ which change in charge results in a detectable signal; and,

(c) detecting the signal, thereby detecting the component of interest.

Claims 8 and 82-84 have been canceled.

Claims 16 and 90-92 have been canceled.

Conclusions

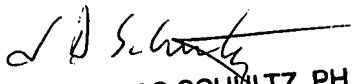
Claims 1, 2, 9 and 85-89 are allowed.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Jeff Lundgren whose telephone number is 571-272-5541. The Examiner can normally be reached from 7:00 AM to 5:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, James Schultz, can be reached on 571-272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JSL


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